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Expanding conceptualizations for the study of learning

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1. The background and need for this special issue

This special issue is dedicated to expanding conceptualizations for the study of learning in contemporary education. Ongoing social changes in the private, public, and economic spheres create new and various demands for learning and education. As the articles of this special issue propose, reasoning, critical thinking, imagination, and managing emotions in dealing with controversial issues have become increasingly important learning requirements in the pursuit of interests toward learning across diverse settings. Also, the way in which people learn to take part in such practices in contemporary contexts, both in formal education and everyday life, are shifting. For instance, novel kinds of digital tools create continuously evolving spaces for learning that transform social interactions and learning practices across contexts and time (Ritella, Ligorio, & Hakkarainen, 2016).

Overall, ongoing changes in society, and the learning requirements they entail, challenge research communities to reconsider how to understand and advance learning in diverse settings. It is also increasingly recognised that there is a need to apply and further develop conceptual and methodological frameworks that are able to account for the complexity of learning in contemporary societal conditions (Kumpulainen & Erstad, 2016). The five articles included here address several important and under-researched topics in contemporary learning and education. Each article also proposes and elaborates on potential conceptual frameworks for expanding conceptualizations for the study of learning in the 21st century.

Before introducing the articles, we will describe the impetus for the publication of the special issue. After that we describe each of the contributions including their specific research topics and conceptual frameworks. We then outline and discuss some cross-cutting themes emerging from our reading of the articles and conclude by pointing out some key arguments made by the commentators to further the ongoing dialogue and research in the field.

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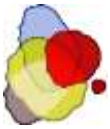


2. The impetus for publishing the special issue

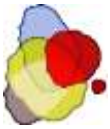
The impetus for this publication was a symposium, "Evolving Theoretical Frameworks for Studying Collaboration in Diverse 21st Century Learning Contexts," presented at the meeting of the EARLI Special Interest Groups 10, 21, and 25 in Padova, Italy on August 27–30, 2014. The conference, "Open Spaces for Interaction and Learning Diversities," was sponsored by EARLI and the University of Padova. The original call for proposals emphasized the need to address the challenges that global movements and cross-cultural communication continue to pose for learning and education. The meeting was the joint effort of three special interest groups: SIG 10, which represents researchers who study aspects of the field of social interaction in learning and instruction; SIG 21 with an emphasis on learning and teaching in culturally diverse settings; and SIG 25 with a focus on educational theory. In particular, the business meeting of SIG 25 (educational theory) encouraged us to publish a collection that would explicitly address the issue of reconceptualizing learning.

Subsequent to the EARLI symposium, we decided to propose a special issue of *Frontline Learning Research* that would capture and extend the discussion. Additional articles were commissioned and this special issue represents the culmination of this process. As guest editors, it was our aspiration from the beginning to both extend and catalyze further discussions about the future of research on learning and education in changing societies.

3. Descriptions of the individual articles and commentaries

The special issue consists of five articles and two commentaries. The first article by Tsafrir Goldberg and Baruch Schwarz asserts that scant attention has been paid to the role of emotions in students' reasoning. Contemporary society is also characterized by tensions and social conflicts related to cultural and religious diversity, which carry interpretations of historical facts that are heavily loaded with emotions. Goldberg and Schwarz address these tensions in history education by introducing a framework for studying the role of emotions and identity for deliberative argumentation. The article provides an overall conceptual framework for the centrality of emotion in cognitive processes such as reasoning and argumentation, and it reports the results of an analysis of students' responses to three different approaches to teaching history: (1) a conventional authoritative approach involving patriotic apologetic teaching, (2) an empathetic dual-narrative approach involving nonjudgmental listening to collective narratives and identifying with emotions and values, and (3) a critical disciplinary inquiry approach involving the critical analysis and synthesis of conflicting sources. The article reports a study of peer discussions between Jewish and Arab students regarding the 1948 "war of independence." The approaches resulted in different processes and outcomes where learners invoked identity, emotion, and perspective-taking; students became aware of their own biases, which limited, or eliminated in some cases, productive discussions. Goldberg and Schwarz propose that teachers consider ways of engaging students' positive and negative emotions and construct authentic learning activities; in this way, students may harness their emotions and engage in critical classroom discussions of emotionally-charged topics in content areas such as history.

The article by Jaakko Hilppö, Antti Rajala, Tania Zittoun, Kristiina Kumpulainen, and Lasse Lipponen addresses the role of imagination in learning, an aspect of the cognitive process that has received scant attention in prior research. The article proposes an overall conceptual framework of the centrality of imagination in learning, and it reports the findings from a case analysis of Finnish primary-school students in a science classroom. Imagination, from their point of view, is characterized by a partial and temporary separation from the immediate, proximal experience of the social and material world into distal experiences, which are ultimately connected back to the present experience. The analysis of the single case illustrates several aspects of imagination as identified by their conceptual framework. These include encouraging students to break the constraints of time and space that are often superimposed on the teaching process in

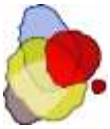


classrooms both in Europe and in the U.S. Their discussion illustrates how students make sense of scientific phenomena and how that sensemaking expands both in time and in space. Throughout this process, the students' thinking becomes more refined and differentiated through what they reference as "loops of imagination," referring to the back-and-forth movement between proximal and distal experiences. Finally, they acknowledge that while the analysis of the single case is instructive, further research needs to be conducted to determine how the conceptual framework applies to varied instances of imagination.

The article by William Penuel, Daniela DiGiacomo, Katie Van Horne, and Ben Kirshner argues that although equity-oriented efforts of expanding young people's access and learning opportunities in science, technology, engineering, and math (STEM) are laudable, to date, too little attention has been paid to gaining a more nuanced understanding what it entails to develop and sustain an interest-driven STEM-learning pathway across settings and over time among diverse youth. To overcome this limitation, the authors propose a social-practice theory as a prominent theoretical lens to guide the study of learning pathways across varied contexts and over time. They contend that using social-practice theory in the analysis of youth learning is potentially transformative as it unpacks potential leverage points for transforming systems to enable broader participation in STEM. In order to justify their argument, the authors apply social-practice theory to interpret the learning pathway of one adolescent, Jerome, who they followed as part of a longitudinal study of interest-related STEM learning. In their analysis of Jerome, the authors demonstrate how he pursued diverse concerns and became aware of new possibilities for action as he moved across different settings of practice and learned to adjust his contributions to the flow of ongoing activity to fit demands and structures of local institutions. The analysis also powerfully illustrates how institutional structures of practice framed the choices Jerome made about his participation, learning, and becoming in relation to STEM.

The article by Crina Damsa and Alfredo Jornet shows how an ecological perspective can be used to redefine key concepts of research on learning in higher education. In the article, learning is conceptualized as an achievement of whole ecosystems and involves mutually transformative transactions between people and their sociomaterial environments. Although the article builds on existing sociocultural, situative, and sociomaterial approaches to learning, it contributes new insights into conceptualizing learning by discussing the implications of the ecological premises underlying these approaches. By analyzing a video-based case study of an undergraduate course in web design and development, the article shows how "co-construction" in a collaborative student group can be characterized as an unfolding field of action in which intellectual agency intertwines with affective and performative relations. They also demonstrate how "knowledge resources and materials" form an ecology that becomes inseparably entangled with the students' activities. Finally, Damsa and Jornet discuss the limitations of the notions of transfer and boundary crossing in accounting for learning in new higher-education contexts where, they argue, students' activity takes place within a "trans-contextual" ecology of learning in which no clear boundary exists between university and professional settings. The authors suggest practical implications for reorganizing higher education to address transformative potentials emerging in the students' activities.

Lastly, Giuseppe Ritella, Beatrice Ligorio, and Kai Hakkarainen introduce chronotope as a conceptual tool to examine if and how the organization of space and time might affect learning processes. Some previous research, the authors argue, demonstrates that spatial and temporal relations are important for learning, but that our knowledge on this topic is still limited. A problem concerning the examination of space-time is that – as mentioned by Wegerif in his commentary in this issue – its dynamics are often implicit, going beyond verbally articulated understanding, and thus, it is challenging to grasp its effects on learning. The authors' claim is that the emergence of chronotope as a scientific concept might help us to verbalize – and scientifically investigate – what is usually implicit, allowing reflection and dialogue on a dimension of learning that is often taken for granted but that seems to exert a silent influence on how we learn. In this sense, the aim of the article is not to conceptualize education exclusively in terms of space-time, but to suggest a theoretically founded way to examine how the variation of spatial and temporal relations might affect learning processes. Three main features of chronotope are presented and discussed to explore its value as a scientific concept: the examination of the potential interdependency between space and



time; the focus on the social negotiation of space-time; and the coordinated examination of material and discursive processes involved in the negotiation of space-time frames. Using some examples from their own empirical investigations and from the existing literature, the authors discuss how we can gain further insights about learning processes by examining the space-time relations of learning by using chronotope as analytic lens.

4. Cross-Cutting themes and emphases

A closer reading of the conceptualizations presented in the articles revealed three main themes, which we believe are central for the study of learning and educational practice in changing societies. Below, we briefly introduce these themes and discuss how the articles addressed them.

4.1 Theme 1: Expanding time-space contexts of learning

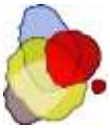
First, some of the articles in this collection challenge the static framing of time and space that often underpins the research of learning. These studies make visible the implicit spatial and temporal infrastructure on which learning and education rely and which is, in turn, being shaped by the processes of learning and education. Common to these studies is that they conceptualize space-time contexts as dynamically intertwined with the activities of the people who are being studied.

In this respect, Ritella et al. introduce the concept of chronotope to create a nuanced theoretical account of how the digitalization of education reshapes the time and space relations of learning activities. They argue that the new technological innovations and ongoing educational reforms transform the spatial and temporal organization of learning in ways that have profound implications for the study of learning. For instance, they use the example of the "flipped learning" approach to exemplify how a new pedagogical approach combined with novel digital technology transforms the learning process by changing where and when school learning takes place. Penuel et al. use the concept of learning pathway to account for learning as movement across settings of practice and over time while people pursue their interests. Hilppö et al. show how primary school students use their imaginations to explore temporally and spatially distant phenomena relevant to the science topic they are studying.

4.2 Theme 2: Agency-driven learning

Some of the contributions in this collection develop concepts that help to examine student agency in learning. Agency is an emerging research topic in the learning sciences that accounts for acting upon and transforming activities and life circumstances (Rajala, Kumpulainen, & Martin, 2016). The focus on agency permits approaching the culture-learning interfaces in terms of both enculturation and transformation and balances the over-emphasis on the collective and reproductive dimensions of learning (Kumpulainen & Renshaw, 2007).

Damsa and Jornet seek to redefine agency in knowledge creation in a way that avoids the dualism of the agent and the material world. In the ecological perspective, people are construed both as active in transforming their circumstances and as passive in being subject to the performative and affective relations in which they engage. Ritella et al. echo the idea of agency as transformation by arguing that the time-space relations of an activity are amenable to change through the actions of the participants. They illustrate their argument by discussing a study of student teachers who managed the time-space contexts of their activities by arranging their bodies in space, searching for resources in the environment, and exploring physical and virtual space.



Some of the articles address agency indirectly. The article by Penuel et al. conceptualizes interest-driven science learning as involving agentic learners who direct their learning pathways across a range of settings. The article also discusses how structures of practice constrain agency and limit access in some settings. The article by Hilppö et al. examines imagination, which can be considered a prerequisite for agency that allows people to distance themselves from the immediate constraints of action and imagine alternatives to the present circumstances (Emirbayer & Mische, 1998).

4.3 Theme 3: New directions for the study of non-cognitive dimensions of learning

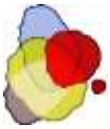
The dominant discourse on learning still concerns standardized measurement of cognitive learning outcomes. The articles of this collection challenge this discourse and make room for imagination, interest, and emotion as well as discussion of values in learning and education. Imagination is an under-researched topic that merits further attention. Building on the pioneering work in cultural psychology of Zittoun and Gillespie (2016), Hilppö et al. develop a framework for researching processes of imagination in science learning. This framework accounts for the back-and-forth movement of imagination between proximal and distal experiences in classroom discourse. Penuel et al. highlight interest as a driving force in learning across contexts. In their conceptualization, interest is not seen as confined within an individual but as emergent in practice and shaped by the available resources and opportunities.

Goldberg and Schwarz argue that emotions are often considered an obstacle for deliberation and reasoning in classrooms. However, they develop a framework for supporting engagement with emotions to promote critical and productive engagement with history topics. Their article also makes an important contribution in starting to theorize how controversial and politically charged topics can be addressed in classroom situations. Thus, their article contributes to a recent discussion in the learning sciences that pays more attention than before to the socio-political contexts of learning (Politics of Learning Writing Collective, 2017). This discussion can be considered a partial response to Gert Biesta's (2010) critique that the dominant focus on learning in educational research has obscured the the value dimension and promoted a view of education as a technical matter of effectiveness and efficiency.

5. Conclusion

While addressing important research topics in contemporary education, the articles of this special issue introduce several potential frameworks for expanding conceptualizations for the study of learning in the 21st century. The research foci and the conceptual framings that they discuss also point out the need for research communities in learning and education not only to engage in empirical research in novel settings, but also to reflect upon the theoretical frameworks that explicitly or implicitly inform the research on learning. It is important to unpack the often-implicit assumptions, values, and educational purposes that underlie the theoretical frameworks and to consider the implications for what it means to learn in the 21st century.

In his commentary, Rupert Wegerif applauds the authors of this collection for making their theoretical assumptions visible and bringing them under scrutiny. At the same time, he points out quite rightly that there are always theoretical assumptions involved in research on learning that foreground some relevant educational phenomena and make others more difficult to consider. He cautions that new conceptualizations of learning are not valuable in themselves, and he challenges us to think what is gained if we look at things using the conceptual frameworks proposed in the articles and why we should invest our energy specifically in these conceptual frameworks and not others.



The other commentators, Jessica McKeown and Cindy Hmelo-Silver, suggest that the proposed conceptual frameworks can be useful in inspiring new designs for promoting emergent learning that is often valued in contemporary educational settings. As a way forward, both of the commentaries suggest putting the conceptual frameworks advanced in the articles to rigorous empirical tests, for example, through experimental studies and design research.

As guest editors, we agree that the worth of the conceptual and theoretical frameworks presented and discussed will be determined by their potential to inform further empirical and interventionist research. Yet, we also underscore that there is no straightforward way to determine "what works" in educational research. Learning is a normative concept that involves both analytical reasoning concerning the theoretical assumptions that lead educational research and value judgements concerning the purposes of education at large (Biesta, 2010). Thus, we urge further research and political discussion on how learning is conceptualized in the research community and in the larger society, in attempts to document and assess the *value* of educational interventions and programs in scientifically sound manners.

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